18. Write short notes on

(a) Osmotic pour

(b) Ocean biomas

19. Design a piezoelectric energy harvesting system for vibration-based applications.

20. Evaluate the performance of different batteries.

Shanmuga Industries Arts & Science College T.V.Malai

APRIL/MAY 2025

23PSPH26 — RENEWABLE ENERGY AND ENERGY HARVESTING (SEC –I)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is biomass, and how is it used?

2. List out the benefits of tidal energy.

3. Name two methods for storing solar energy.

4. What is meant by non – convective solar pond?

5. What is the purpose of power electronic interfaces in wind turbines?

6. Compare ocean energy potential with wind and solar.

7. What is the major environmental concern associated with hydro power?

8. What is the primary application of piezoelectric energy harvesting?

9. Mention the applications of electromagnetic energy harvesting.

10. What do you understand by liner generation.

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Discuss the benefits of offshore wind energy.

Or

(b) Explain the process of biogas generation from biomass.

12. (a) Discuss the advantages of solar cookers.

Or

(b) What are the characteristics of photovoltaic (PV) systems?

13. (a) Describe the working principle of wave energy devices.

Or

(b) Write a short note on Grid inter connection Topologies.

14. (a) Explain the differences between impoundment and run–of–river hydropower.

Or

(b) Describe the mathematical modelling of piezoelectric generators.

15. (a) Discuss recent applications of electromagnetic energy harvesting.

Or

(b) Explain carbon capture using chemical solvents.

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SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain the need of renewable energy and briefly explain the significance on non – conventional energy sources.

17. Evaluate the performance of a solar PV system with and without sun tracking.